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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,404	02/06/2006	Masahiko Igarashi	025416-00025	2541
4372	7590	12/15/2009	EXAMINER	
ARENT FOX LLP 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036			GARCIA, ERNESTO	
			ART UNIT	PAPER NUMBER
			3679	
			NOTIFICATION DATE	DELIVERY MODE
			12/15/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com

IPMatters@arentfox.com

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Office Action Summary

Application No.

10/567,404

Applicant(s)

IGARASHI ET AL.

Examiner

ERNESTO GARCIA

Art Unit

3679

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date 7/6/09
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

The drawings are objected to because reference character "20", in Figures 3-5, is in the wrong location and does not depict a splined tooth rather the current reference character points to the body on which the splined teeth are made. The same objection applies to reference character "120" in Figure 14 and "220" in Figure 15. The location of reference character "126" in Figure 14 is in the wrong place and does not depict a splined tooth. Further, the location of reference character 22a in Figure 1 is inconsistent with that of Figure 2 and does not depict a convex peak as described on page 7, line 8, of the substitute specification filed on April 14, 2009.

Further, the plane upon which sectional view, Figure 2, is taken should be indicated on the view from which the section is cut by a broken line. The ends of the broken line should be designated by Arabic or Roman numerals corresponding to the view number of the sectional view, and should have arrows to indicate the direction of sight. See 37 CFR 1.84(h)(3) and MPEP 608.02(e).

The drawings are objected to under 37 CFR 1.83(a) because of the following:

The drawing fail to show the constant tooth thickness of the straight peak of the shaft tooth section and the constant tooth thickness of the straight peak of the hub tooth

section. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Applicants should consider identifying the so-called thicknesses in the drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended". If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

the recitations "said hub tooth section has a straight peak opposing the step region of said shaft tooth section" recited in claim 11, line 14-15, "said shaft tooth section has a straight peak having a constant tooth thickness" recited in claim 11, line 8-9, and "said peak of said hub tooth section having a constant tooth thickness" recited in claim 11, line 15-16, lack proper antecedent basis in the specification.

Claim Rejections - 35 USC § 102

Claims 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ichikawa et al., 7,052,402.

Regarding claim 11, Ichikawa et al. disclose, in Figure 11, a mechanism comprising a shaft **100** and a hub **200**. The shaft **100** has a shaft tooth section **204**. The hub **200** has a hub tooth section **104** in engagement with the shaft tooth section **204**. The shaft tooth section **204** has a straight peak **A1** (see marked-up attachment provided in the last Office action) having a constant tooth thickness and a valley (the cavity between two teeth) having an outside diameter varying from an end of the shaft **100** toward a shaft shank **103** of the shaft **100**. The valley has a step region **A2** sloped toward the hub tooth section **104** obliquely at a predetermined angle. The valley has a step region **A2** radius of the shaft tooth section represents a distance from a central axis of the shaft **100** to a bottom land **A4** of the valley is constant from the step region **A2** to the end of the shaft **100**. The hub tooth section **104** has a straight peak **A3**. The straight peak **A3** opposes the step region **A2**, opposes the valley (the cavity) of the

shaft tooth section **204**, and engages the valley (the cavity) of the shaft tooth section **204** (note that the language “opposing” is too broad and does not indicate “radially opposing”). The peak **A3** of the hub tooth section **104** has a constant tooth thickness and a valley (the cavity between the teeth of the hub). The peak **A3** of the hub tooth section **104** and the valley (the cavity) of the hub tooth section **104** have a constant inside diameter from the end of the shaft **100** toward the shaft shank 103 in an axial direction of the shaft.

Regarding claim 12, Ichikawa et al. disclose the step region **A2** has a tilt angle set to a value ranging from 5 degrees to 45 degrees (see Figure 11).

Response to Arguments

Applicants' arguments filed September 21, 2009 have been fully considered but they are not persuasive.

Applicants argue the shaft tooth thickness of Ishikawa does not have a constant tooth thickness because a majority of the hub 200 opposing the step region A2 is sloped or curved and is not a straight peak portion having a constant tooth thickness. In response, it is unclear how making reference to the hub when arguing the shaft tooth thickness overcomes the rejection. The shaft tooth of Ishikawa still has a constant tooth thickness as commonly known. Further, nowhere does Ishiwaka present or discuss any tooth thickness having a variable thickness as illustrated in the attached drawings by the applicants. The splines in Ishiwaka rather show cross-sections along the longitudinal

axis of the shaft rather than in the circumferential direction of the shaft. Further, the fact that the hub opposes the step region A2 and is sloped or curved does not provide any evidence to support what the shaft contains in the circumferential direction. Applicants further argue "and is not a straight peak portion having a constant tooth thickness". The examiner presumes that this directed to features of the shaft. In response, it should be noted that the claim does not recite any shaft tooth thickness but rather a straight peak, which has a constant tooth thickness and thus the argument is not commensurate with the scope of the claims. Ishiwaka shows the peak with varying diameters in the shaft tooth section. However, applicants should note that the claim is open-ended and other tooth sections of different diameters are not excluded. Accordingly, as long as there is a straight peak, in either the hub or the shaft, the language of the claim is still met.

Conclusion

The art made of record and not relied upon is considered pertinent to applicant's disclosure. Gutierrez et al., 7,614,818, shows a similar shaft as state of the art. Barbot, FR-2,802,255, also shows a similar power transmission mechanism albeit of having variable diameters on the tooth section of shaft.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

Art Unit: 3679

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernesto Garcia whose telephone number is 571-272-7083. The examiner can normally be reached from 9:30AM-6:00PM. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached at 571-272-7087.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/E. G./

Examiner, Art Unit 3679

December 12, 2009

/Michael P. Ferguson/
Primary Examiner, Art Unit 3679